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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/690,437	10/18/2000	Michel K. Susai	2006579-0454 (CTX-170)	3741

69665 7590 03/30/2009
CHOATE, HALL & STEWART / CITRIX SYSTEMS, INC.
TWO INTERNATIONAL PLACE
BOSTON, MA 02110

EXAMINER

CHANKONG, DOHM

ART UNIT	PAPER NUMBER
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2452

MAIL DATE	DELIVERY MODE
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03/30/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/690,437	Applicant(s) SUSAI ET AL.	
	Examiner DOHM CHANKONG	Art Unit 2452	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 January 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

1. This action is in response to Applicant's arguments filed on 1/7/2009. No claims are amended. Claims 9-44 are presented for further examination.
2. This action is a final rejection.

Response to Arguments

3. Applicant's arguments with respect to the § 112, second paragraph rejection have been considered and are persuasive. The rejection is therefore withdrawn.
4. With respect to the § 103 rejection, Applicant argues that the cited references do not disclose determining whether or not a client and server are transferring data via a connection. Specifically, Applicant argues that Bhide is merely directed to tracking the state of a connection based on whether the connection is open, closed, or in use. According to Applicant, a connection is marked "in use" during the entire time the connection is assigned to a client and does not change whether or not the client and server are transferring data. Applicant's arguments are not persuasive for the following reasons.

As understood by the Examiner, the purpose of Applicant's invention is best described by the following paragraph in Applicant's specification:

"The goal is to reuse the same connection to server S that was previous used for client C1 if client C1 is finished with the connection or is in 25 "think time". Instead of waiting for client C 1 to initiate a FIN (finish) command or a RST (reset) command to free up the connection, interface unit 202 uses the content length parameter to confirm that all of the requested data has been received by client C1" [pg. 18, lines 23-28].

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Additionally, with respect to monitoring chunk-size fields, Applicant's specification recites:

“Instead of waiting for client C1 to initiate a FIN (finish) command or a RST (reset) command to free up the connection, the interface unit uses the chunk-size field that equaled zero to confirm that all of the requested data has been received by client C1. This indicates to interface unit 202 that, *even though client C1 may be pausing for some reason before it sends a FIN or RST command*, client C1 is finished with the connection.” (emphasis added) [pg. 23, lines 20-25].

Based on the specification, the monitoring of application layer is directed at determining *whether the client and server have transferred all requested data*. Applicant's arguments suggest something entirely different - that another client may use the same connection as long as the first client is not presently transferring data *even if the first client has not completed transferring all of the requested data*. That is, Applicant's arguments suggest that if there is a time when a first client and server are not transferring requested data, the connection is available for use by other clients. However, Applicant's specification clearly suggests determining the availability of the connection based on the content length parameter or chunk size fields and whether the client and server have finished transferring all data. The claim is interpreted consistent with the disclosure in Applicant's specification.

The combination of Bhide and Fielding read on this interpretation. Bhide's teaching that a connection is “in use” merely reflects that the client and server are still transferring data. Fielding teaches that a client and server can signal that they are finished utilizing a persistent connection using the Connection header field within an HTTP message [pg. 36, §8.1.2 Overall Operation and §8.2.2: teaching that a client or a server can signal to close a TCP connection using the Connection header field. It should be noted that this header field is included in Bhide's messages because they are HTTP messages]. The header includes for example chunk sizes

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[Fielding, 3.6.1. Chunked Transfer Coding, lines 1-6]. The chunk sizes are used “to verify that it has received the full message.” Thus, the chunk size informs that a connection is still being used to receive the entire message.

Based on Fielding, one of ordinary skill in the art would interpret that Bhide’s connection would no longer be in use based on analyzing the chunk size fields located in the header fields of the HTTP messages. Because Bhide teaches persistent connections, once no longer in use, the same connection may be utilized by another client because the first client has transferred all requested data. This interpretation of the claimed limitation is consistent with Applicant’s specification. For the foregoing reasons, Applicant’s arguments are not persuasive. The rejection set forth in the previous action is therefore maintained.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 9-13, 21, 24-31, 39 and 42-44 are rejected under 35 U.S.C §103(a) as being unpatentable over Bhide et al, U.S. Patent No. 5,852,717 [“Bhide”], in view of RFC 2616, Fielding et al. (hereinafter Fielding), June 1999.

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6. As to claim 9, Bhide discloses a method of polling by an interface unit a transport layer connection to a server, the method comprising the steps of:

- a. receiving, by an interface unit, a first request of a first client to access a server, the first client and the interface unit communicating via a first transport layer connection [column 6 «lines 5-13»: Bhide's agent reads on the claimed interface unit];
- b. identifying, by the interface unit that the interface unit has a second transport layer connection established with the server indicated by the first request [column 6 «lines 20-26»];
- c. determining, by the interface unit, that a second client and the server are not transferring data for a second request via the second transport layer connection [column 6 «lines 23-25 and 54-56»: determining whether an open connection is "available" which implies determining whether another client is using the connection to transfer data];
- d. transmitting, by the interface unit, the first request via the second transport layer connection in response to the determination of step (c) [column 6 «lines 23-25»: using the open connection when it is determined to be available];
- e. determining, by the interface unit, that the second client and the server are transferring data for the second request via the second transport layer connection in response to receiving a third request from one of the first client or the second client to access the server [column 6 «lines 32-40»: multiple clients requesting access to servers | column 6 «lines 53-56»: determining that an open network connection is not available];

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- f. establishing, by the interface unit, a third transport layer connection with the server in response to the determination of step (e) [column 6 «lines 54-56»: opening a new network connection].

Bhide however does not expressly disclose that his agent determines from monitoring application layer data of network traffic received by the interface unit that the second client and server are or are not transferring data. Bhide does disclose that the agent receives HTTP request and response messages [Figure 10]. Fielding teaches that a client and server can signal that they are finished utilizing a persistent connection using the Connection header field within an HTTP message [pg. 36, §8.1.2 Overall Operation and §8.2.2: teaching that a client or a server can signal to close a TCP connection using the Connection header field. It should be noted that this header field is included in Bhide's messages because they are HTTP messages]. The header includes for example chunk sizes [Fielding, 3.6.1. Chunked Transfer Coding, lines 1-6]. The chunk sizes are used "to verify that it has received the full message." Thus, the chunk size informs that a connection is still being used to receive the entire message. These parameters both correspond to application layer data. Thus, it would have been obvious to one of ordinary skill in the art to modify Bhide to include Fielding's application-layer monitoring functionality. One would have been motivated to modify Bhide in such a manner so as to insure that the all data is received by the client prior to closing the connection [see Fielding, 3.6.1. Chunked Transfer Coding, lines 1-6; Fielding, 3.6 Transfer Codings, lines 1-5 - improve the accuracy and safe transport by utilizing a verification scheme].

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7. As to claim 10, Bhide discloses receiving, by the interface unit, the second request to access the server via one of the first client, the second client or a third client [column 6 «lines 32-40»: multiple clients requesting access to servers].

8. As to claim 11, Bhide discloses intercepting, by the interface unit, one of the first request, the second request or the third request [column 6 «lines 4-6» : agent receives all requests].

9. As to claim 12, Bhide discloses step (b) comprising identifying, by the interface unit, the server from a destination internet protocol address of a network packet of the first request [column 11 «lines 14-16»].

10. As to claim 13, Batra discloses step (b) comprising identifying, by the interface unit, the server from a path name of the first request [column 11 «lines 14-16»].

11. As per claims 15 and 16, Bhide disclose the invention substantially as rejected in claim 1 above, but does not explicitly say means for utilizing a content length parameter or a chunk size field to determine whether all of said information has been sent to said first client. However, such a feature was well known in the art at the time of Applicant's invention. See the rejection of claim 1 in view of Fielding which discussed monitoring application layer data such as content length and chunk size.

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12. As per claims 16, 18, 19, 33, 34, 36, and 37, the claims are rejected for the same reasons as rejection to claim 15 above. Note that each chunk contains its own size fields.

13. As to claim 17, Bhide does not expressly disclose determining, by the interface unit, that the second client and the server have not transferred at least a last byte of data. However, Applicant's specification recites the use of sequence numbers when transferring data between a client and server [Applicant's specification, pg. 10, lines 10-18]. Applicant's specification recites use of the sequence numbers to determine the last successfully received byte of data. Similarly, Fielding discloses the use of a "last-chunk" identifier; this teaching implies that the transfer of a last byte of data is not complete can be determined based on the application layer data (if a recipient has not received a full message, then the last byte of data has not been received). It would have been obvious to one of ordinary skill in the art to have incorporated Fielding's teachings into Bhide's agent. Such a feature is well known in the art as it provides the ability to monitor data transfer between clients and servers and to insure that the full message is received by determining whether the last chunk has been received.

14. As to claim 20, Bhide discloses inserting, by the interface unit, information in the first request of the first client to indicate to the server to keep a transport layer connection open [column 17 «lines 37-39»].

15. As to claim 21, Bhide discloses step (f) comprising waiting, by the interface unit, to use the second transport layer connection to transmit the third request [column 7 «lines 18-24» :

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implied when the predetermined number of connections has already been opened. The agent would then have to wait for a connection to become available].

16. As to claim 24, Bhide discloses receiving, by the interface unit, a response to the first request from the server via the second transport layer connection, and transmitting the response to the first client via the first transport layer connection [column 6 «lines 13-15»].

17. As to claim 25, Bhide discloses one of the first, second or third request comprises a request to open a transport layer connection [column 6 «lines 5-6»].

18. As to claim 26, Bhide discloses transmitting, by the interface unit, the third request via the third transport layer connection [column 6 «lines 43-45 and 54-56 where : it is implied that upon opening a new connection, the new connection is being used to serve the request].

19. As to claims 27-31, 39 and 42-44, as they are merely claims to an interface unit that implements the method of claims 10-13, 21 and 24-26, respectively, they are similarly rejected for at least the same reasons as set forth above.

20. As to claim 35, as it is merely a claim to an interface unit that implements the method of claim 17, it is similarly rejected for at least the same reasons as set forth above.

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21. As to claim 38, as it is merely a claim to an interface unit that implements the method of claim 20, it is similarly rejected for at least the same reasons as set forth above.

22. Claims 14, 22, 23, 32, 40 and 41 is rejected under 35 U.S.C §103(a) as being unpatentable over Bhide and Fielding, in view of Gopal et al, U.S Patent No. 6.163.812 [“Gopal”].

23. As to claim 14, Bhide does not expressly disclose transmitting, by the interface unit, the first request via the second transport layer connection prior to receiving, by the interface unit, one of a finish command or a reset command from the second client. However, such a feature was well known in the art at the time of Applicant’s invention. In the same field of invention, Gopal is directed towards an application that maintains a pool of unused connections in a connection pool [column 10 «lines 12-17»]. Gopal discloses transmitting, by the interface unit, the first request via the second transport layer connection prior to closing a connection by submitting a finish (FIN) packet [column 10 «lines 18-41»]. It would have been obvious to incorporate Gopal’s teachings into Bhide. One would have been motivated to modify Bhide as Gopal would enhance Bhide’s functionality by providing the capability of receiving additional connection requests from other clients to use the same connection prior to closing the connection through the use of the FIN packet.

24. As to claim 32, as it is merely a claim to an interface unit that implements the method of claim 14, it is similarly rejected for at least the same reasons as set forth above.

25. As to claims 22 and 23, Bhide does not expressly disclose receiving an acknowledgement from the second client that data transfer has completed or transmitting the third request in response to receiving the acknowledgement and prior to receiving a request to close a transport layer connection between the second client and the server. However, such a feature was well known in the art at the time of Applicant's invention as evidenced by Gopal. Gopal discloses receiving an acknowledgement from the second client that data transfer has completed and prior to receiving a request to close a transport layer connection between the second client and the server [column 10 «lines 36-41» : sending of a FIN command implies that all the data has been transferred]. It would have been obvious to one of ordinary skill in the art to incorporate Gopal's teachings into Bhide. One would have been motivated to modify Bhide as Gopal would enhance Bhide's functionality by providing connection closing capability through the use of the FIN packet.

26. As to claim 23, Bhide discloses transmitting requests after a connection has been returned to the connection pool. According to Gopal, a connection is only returned to the pool upon receiving the acknowledgement from the client that the data transfer is complete [column 10 «lines 36-41»]. Therefore, Bhide's teaching of transmitting a third request on a connection that is no longer being used is done in response to the acknowledgement that the data transfer is complete.

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27. As to claims 32, 40 and 41, as they are merely claims to an interface unit that implements the method of claims 14, 22 and 23, respectively, they are similarly rejected for at least the same reasons as set forth above.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DOHM CHANKONG whose telephone number is (571)272-3942. The examiner can normally be reached on Monday-Friday [8:30 AM to 4:30 PM].

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee can be reached on 571.272.3964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Dohm Chankong/
Examiner, Art Unit 2452